

Notes on Palearctic and Oriental Phrenapatini (Coleoptera: Tenebrionidae), with descriptions of four new species

Wolfgang SCHAWALLER*)

Staatliches Museum für Naturkunde, Rosenstein 1, D-70191 Stuttgart, Germany.

Notes on Palearctic and Oriental Phrenapatini (Coleoptera: Tenebrionidae), with descriptions of four new species. - A key to the Palearctic and Oriental genera of Phrenapatini (Tenebrionidae) is presented. *Picnotagalus* Kaszab, 1939 is considered as a junior synonym of *Scolyto-caulus* Fairmaire, 1896. A check-list of the Palearctic and Oriental species of Phrenapatini is provided, new taxonomic and faunistic data of several species are added. The following new species are described: *Dioedus sumbawacus* sp.n. (Sumbawa), *Pseudophthora sabahca* sp.n. (Sabah), *Pseudophthora lomboca* sp.n. (Lombok), *Taiwanotagalus nepalicus* sp.n. (Nepal).

Key-words: Coleoptera - Tenebrionidae - Phrenapatini - taxonomy - Palearctic - Oriental.

INTRODUCTION

The species of the tenebrionid tribe Phrenapatini (Phrenapatinae including Archaeoglenini) form a homogenous and probably monophyletic group, inhabiting nearly all arboreal habitats, but are particularly speciose in tropical forests. KASZAB (1977), when treating the Papuan-Pacific species of Phrenapatini, presented diagnostic characters and a key for the genera from that region. The data on Palearctic and Oriental species have never been summarized. The aim of this paper is not a revision of the species but the presentation of new material (including 4 new species) accumulated in studied collections. With this new material, 22 species of Phrenapatini are now known from the southern Palearctic and Oriental regions.

Whereas the genera are outlined by distinct characters (see key of the genera) the species characters are quite poor (proportions of pronotum and elytra, body size, punctuation) and their infraspecific variability is still unknown. The aedeagi of nearly all published species of the Phrenapatini (about 100 species) are hitherto unknown, and the general morphology and generic differences, if any, are not described or figured. This is probably due to the smallness and weak sclerotization of the aedeagi in this tribe. In general, the aedeagus of Phrenapatini consists of a basal piece

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ventrally sutured and of closed paired parameres forming a tube-like structure enclosing the penis (Figs 10-13).

ABBREVIATIONS

MHNG Muséum d'histoire naturelle Genève.

NHMB Naturhistorisches Museum Basel.

SMNS Staatliches Museum für Naturkunde Stuttgart.

KEY TO THE PALEARCTIC AND ORIENTAL GENERA OF PHRENAPATINI

- 1 Antenna with only 9 antennomeres, antennal club with 2 antennomeres
 *Taiwanotagalus* Masumoto, 1982
- Antenna with 11 antennomeres, antennal club with 2-4 antennomeres 2
- 2 Antennal club with 4 antennomeres, cheeks with distinct border, mandibles big and modified *Scolytocaulus* Fairmaire, 1896
 (*Picnotagalus* Kaszab, 1939 syn.n.)
- Antennal club with 2-3 antennomeres, cheeks without border, mandibles normal 3
- 3 Antennal club with 2 antennomeres, head ventrally with or without deep antennal grooves *Dioedus* LeConte, 1862
- Antennal club with 3 antennomeres, head ventrally with deep antennal grooves 4
- 4 Pronotum with broad lateral margins, protibia laterally only with a few spines, Palearctic species *Clamoris* Gozis, 1886
- Pronotum with fine lateral margins, protibia laterally with distinct dentation, Oriental (and Pacific-Papuan) species . . . *Pseudophthora* Kaszab, 1970

CHECK-LIST OF THE PALEARCTIC AND ORIENTAL SPECIES OF PHRENAPATINI

Clamoris canalicollis (Lewis, 1894)

Distribution: Japan.

Clamoris crenata (Mulsant, 1860)

Material: SW France, St. Girons, VIII.1980 leg. J. Roppel, 2 ex. SMNS. France, Dept. Gironde, between Soulac, Montalivet and Lac de Hourtin, VIII/IX. 1989 leg. J. Martens, 1 ex. SMNS. Spain, Jaen, Sierra de Cazorla, 15.V.1960 leg. C. Besuchet, 10 ex. MHNG, 2 ex. SMNS. Algeria, Gde Kabylie, Akfadou forest, 9 km W Adekar, 1300 m, 17.V.1988 leg. C. Besuchet, D. Burckhardt & I. Löbl, 5 ex. MHNG, 1 ex. SMNS.

Distribution: Southern France (type locality), Italy, Spain, Portugal (Español 1979), Algeria (new record).

Clamoris formosana (Masumoto, 1982)

Distribution: Taiwan.

Dioedus fruhstorferi Bremer, 1995*Distribution:* Sulawesi.**Dioedus girardi** Bremer, 1995*Distribution:* Southern India.**Dioedus impressicollis** (Gebien, 1913)*Remarks:* Type not in the Frey Collection (NHMB).*Distribution:* Philippines.**Dioedus loffleri** Kaszab, 1977

Fig. 1

Material: Borneo, Sabah, Mt. Kinabalu NP, below Layang Layang, 2595 m, 2.V.1987 leg. A. Smetana, 1 ex. MHNG. Borneo, Sabah, Mt. Kinabalu, 1500 m, 30.IV.1987 leg. D. Burckhardt & I. Löbl, 1 ex. MHNG. Borneo, Sabah, Crocker Range NP, Gunung Emas, 1600 m, 6.-18.VI.1996 leg. J. Kodada, 1 ex. SMNS.

Distribution: Borneo/Sabah.**Dioedus minimus** (Gebien, 1927)

Figs 3-4

Material: N Sumatra, 30 km SW Brastagi, Gunung Sinabung, 1300-1800 m, 22.II.1991 leg. L. Bocák & M. Bocáková, 1 ex. NHMB, 1 ex. SMNS. W Malaysia, Cameron Highland, Gunung Beremban, 1.-3.IV.1990 leg. A. Riedel, 1 ex. SMNS.

Remarks: Although the single female from Malaysia is somewhat convexer than both specimens from Sumatra, I hope not to fail in assigning both series to a single species. The body size (2.2-2.3 mm), proportions of pronotum and elytra as well as the dorsal punctuation show no distinct differences (Figs 3-4). The type is not in the Frey Collection (NHMB).

Distribution: Sumatra (type locality), W Malaysia (new record).**Dioedus miyakensis** (Nakane, 1963)*Distribution:* Japan.**Dioedus schultzei** (Gebien, 1913)*Remarks:* The type is not in the Frey Collection (NHMB).*Distribution:* Philippines.**Dioedus sumatranus** (Gebien, 1927)*Remarks:* 1 paratype is in the Frey Collection (NHMB).*Distribution:* Sumatra.

Dioedus sumbawacus sp.n.

Figs 2, 10

Distribution: Sumbawa.**Dioedus tokaranus** (Nakane, 1963)*Distribution*: Japan.**Pseudophthora cederholmi** Kaszab, 1980*Distribution*: Sri Lanka.**Pseudophthora indica** Kaszab, 1979

Fig. 6

Material: India, Tamil Nadu, Kodaikanal, N Munnar, 27.-29.VIII.1989 leg. A. Riedel, 7 ex. SMNS.*Distribution*: Southern India.**Pseudophthora lomboca** sp.n.

Figs 7, 12

Distribution: Lombok.**Pseudophthora sabahca** sp.n.

Figs 8, 13

Distribution: Borneo/Sabah.**Scolytocaulus bouchardi** Fairmaire, 1896

Fig. 9

Material: N Sumatra, Partungkoan, Samosir, 1600 m, 28.VIII.1991 leg. D. Erber, 1 ex. SMNS. N Sumatra, Brastagi, Gunung Sibayak, 1450-1900 m, 19.-23.II.1991 leg. L. Bocák & M. Bocáková, 3 ex. NHMB, 1 ex. SMNS. Borneo, Sabah, Mt. Kinabalu NP, Headquarters, 1500-1600 m, 11.-15.XI.1996 leg. W. Schawaller, 2 ex. SMNS. Borneo, Sabah, Mt. Kinabalu NP, Headquarters at Liwagu River, 1500 m, 30.IV. & 17.V.1987 leg. A. Smetana, 2 ex. MHNG. Borneo, Sabah, Batu Punggul Resort, 24.VI.-1.VII.1996 leg. J. Kodada, 1 ex. SMNS. Malaysia, Cameron Highlands, Gunung Beremban, 1.-3.IV.1990 leg. A. Riedel, 8 ex. SMNS.*Remarks*: *Scolytocaulus bouchardi* (Fig. 9) differs from the new combined *horni* from Sri Lanka in particular by the proportions of the pronotum and elytra. In *horni* the lateral margins of the pronotum are distinctly narrowed towards the base, in *bouchardi* these margins are nearly parallel; in *horni*, the elytra are said to be 1.7 times longer than pronotum, in *bouchardi* this relation is 2.10-2.45 times. The punctuation of the propleures is somewhat different in the single series.*Distribution*: Sumatra (type locality), Borneo (new record), Malayan Peninsula (new record), Philippines (Kaszab 1980).**Scolytocaulus horni** (Kaszab, 1939) comb.n.*Remarks*: For this species the monospecific genus *Picnotagalus* Kaszab, 1939 has been established. The diagnostic characters of this genus (antennal club with 4 antennomeres, head with deep antennal grooves, cheeks with border, big modified

mandibles) fully correspond with *Scolytocaulus* Fairmaire, 1896, thus *Picnotagalus* Kaszab, 1939 is considered as a junior subjective synonym of *Scolytocaulus* Fairmaire, 1896.

Distribution: Sri Lanka.

***Scolytocaulus kabakovi* Kaszab, 1980**

Distribution: Vietnam.

***Taiwanotagalus klapperichi* Masumoto, 1982**

Distribution: Taiwan.

***Taiwanotagalus nepalicus* sp.n.**

Figs 5, 11

Distribution: Nepal.

DESCRIPTIONS OF NEW SPECIES

***Dioedus sumbawacus* sp.n.**

Figs 2, 10

HOLOTYPE (male): Indonesia, W Sumbawa, Batudulang, 30 km S Sumb. Besar, 1000 m, 10.II.1994 leg. Bolm, SMNS.

PARATYPES: Same data as holotype, 2 ex. (sex not determined) SMNS.

DESCRIPTION

Body light castaneous, partly with some irregularly scattered dark spots; body length 4.4-4.8 mm. Head with dense punctation, distance between punctures equal to 1-4 diameters; clypeus with smaller punctation; clypeal suture fine; frons with distinct excavation; cheeks without border, elevated but not surpassing anterior margin of clypeus; eyes prominent; interocular distance equal to 4-5 eye diameters; antenna with 11 antennomeres, proportions of antennomeres see Fig. 2; head ventrally only with flat antennal grooves. Pronotum (Fig. 2) with relation width/length 1.53; anterior corners surpass middle of anterior margin; punctation as on head, between punctation with scattered micropunctures (magnification 70x); anterior margin with a small median semicircled impression and a faint hump on each side (Fig. 2); lateral margin equal on its total length. Elytra (Fig. 2) about 1.4times longer than width combined; 9 rows of punctures, distances between punctures equal to 2-4 diameters; second row with 40 punctures; rows 1-2 reaching apex, rows 3+6 joined before apex and enclosing joined rows 4+5; intervals convex, wrinkled, with very sparse micropunctures as on pronotum. Abdominal sternites 1-4 with somewhat smaller punctation than on abdominal sternite 5. Protibia in both sexes in distal internal third with a few long yellow hairs; protibia laterally with 4-5 distinct teeth, mesotibia with 3-4 finer spines, metatibia without spines. Aedeagus see Fig. 10.

REMARKS: *Dioedus sumbawacus* sp.n. shares the anterior impressions of the pronotum with *sumatranus* (Gebien, 1927) from Sumatra and *fruhstorferi* Bremer, 1995 from

Celebes. However, in addition to the different proportions of the pronotum and elytra, in *sumatranus* the pronotal impression is circle-like and the cheeks surpass the anterior margin of the clypeus (according to the description), in *fruhstorferi* the cheeks are even more prominent. Close relationships to the Papuan-Pacific species (KASZAB 1977) are not recognizable.

***Pseudophthora lomboca* sp.n.**

Figs 7, 12

HOLOTYPE (male): Indonesia, Lombok, Sapit-Semalun Bumbang, 900-1500 m, 14.-16.II.1994 leg. Bolm, SMNS.

PARATYPES: Same data as holotype, 4 ex. (sex not determined) SMNS.

DESCRIPTION

Body light castaneous; body length 3.6-4.0 mm. Head with dense punctation, distance between punctures equal to 1-4 diameters; clypeus with nearly equal punctation; clypeal suture nearly invisible; cheeks without border; eyes flat, not prominent; interocular distance equal to 6-7 eye diameters; antenna with 11 antennomeres, proportions of antennomeres see Fig. 7; head ventrally with deep antennal grooves. Pronotum (Fig. 7) with relation width/length 1.38; anterior corners surpass middle of anterior margin; punctation as on head, between punctation with scattered micropunctures (magnification 70x); lateral margin equal on its total length. Elytra (Fig. 7) about 1.2times longer than width combined; 9 rows of punctures, distances between punctures equal to 1-2 diameters; second row with 26 punctures, punctures distally distinctly diminished; row 1 reaching apex, rows 2+7 joined before apex and enclosing joined rows 3+6 and joined rows 4+5; intervals convex, with very sparse micropunctures as on pronotum. Abdominal sternites 1-4 with small and scattered punctation, abdominal sternite 5 with rough punctation as on pronotum. Protibia in both sexes in distal internal third with a tuft of long yellow hairs; protibia laterally with 4-5 distinct teeth, mesotibia with 2-3 finer spines, metatibia without spines. Aedeagus see Fig. 12.

REMARKS: This species can easily be recognized within the genus, also in comparison with few the Papuan and Pacific species (KASZAB 1977), by the relatively short elytra being only 1.2times longer than width combined, additional by the distally diminishing punctures of the elytral rows.

***Pseudophthora sabahca* sp.n.**

Figs 8, 13

HOLOTYPE (male): Borneo, Sabah, Mt. Kinabalu NP, Sayap, 1000 m, 25.-29.XI.1996 leg. W. Schawaller, SMNS.

PARATYPE: Borneo, Sabah, Mt. Kinabalu NP, Poring Hot Springs, Langanan river, 850 m, 14.V.1987 leg. D. Burckhardt & I. Löbl, 1 female MHNG.

DESCRIPTION

Body light castaneous; body length 3.0 mm. Head with dense punctation, distance between punctures equal to 1-4 diameters; clypeus with nearly equal punctation; clypeal suture fine; cheeks without border; eyes flat, not prominent; interocular distance

equal to 5-6 eye diameters; antenna with 11 antennomeres, proportions of antennomeres see Fig. 8; head ventrally with deep antennal grooves. Pronotum (Fig. 8) with relation width/length 1.47; anterior corners surpass middle of anterior margin; punctation as on head, between punctation with scattered micropunctures (magnification 70x); lateral margin equal on its total length. Elytra (Fig. 8) about 1.5times longer than width combined; 9 rows of punctures, distances between punctures equal to 1-2 diameters; second row with 30-31 punctures; rows 1-2 reaching apex, rows 3+6 joined before apex and enclosing joined rows 4+5; intervals convex, with very sparse micropunctures as on pronotum. Abdominal sternites 1-4 with small and scattered punctation, abdominal sternite 5 with rough punctation as on pronotum. Protibia in both sexes in distal internal third with a tuft of long yellow hairs; protibia laterally with 4-5 distinct teeth, mesotibia with 2-3 finer spines, metatibia without spines. Aedeagus see Fig. 13.

REMARKS: *Pseudophthora sabahca* sp.n. differs mainly from the few other Oriental congeners by the smaller body size and by different proportions of pronotum and elytra. Additionally, in *cederholmi* the elytral punctation is extinct distally.

Taiwanotagalus nepalicus sp.n.

Figs 5, 11

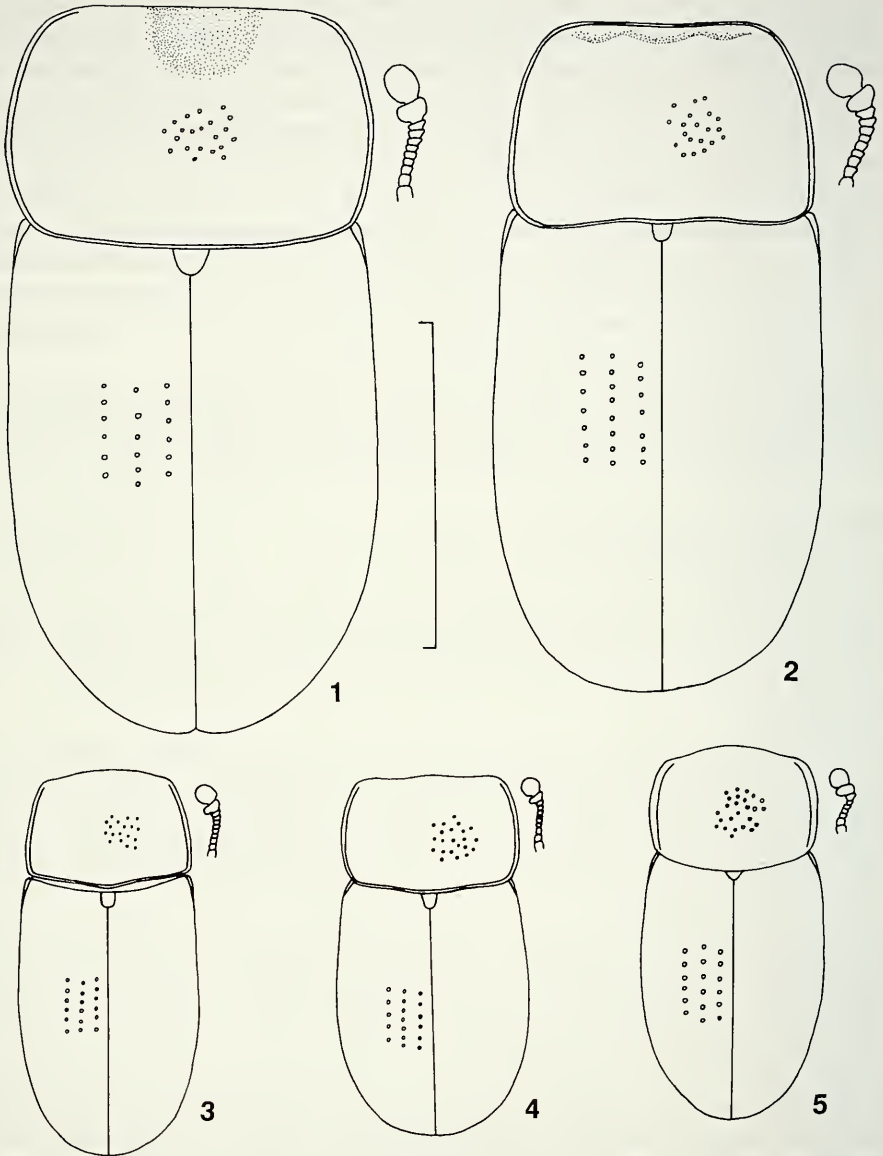
HOLOTYPE (male): Nepal, Khandbari Distr., forest above Ahale, 2300 m, 26.III.1982 leg. A. & Z. Smetana, MHNG.

PARATYPES: Same data as holotype, 1 ex. (sex not determined) MHNG, 1 female SMNS. Nepal, Sankhua Sabha Distr., Arun valley between Mure and Hurure, 2050-2150 m, mixed broadleaved forest, 9.-17.VI.1988 leg. J. Martens & W. Schawaller, 1 female SMNS.

DESCRIPTION

Body light castaneous; body length 2.0 mm. Head with dense punctation, distance between punctures equal to 0.5-3 diameters; clypeus with sparser and finer punctation; clypeal suture fine; cheeks without border; eyes flat, not prominent; interocular distance equal to 6-7 eye diameters; antenna with 9 antennomeres, proportions of antennomeres see Fig. 5; head ventrally with deep antennal grooves. Pronotum (Fig. 5) with relation width/length 1.33; anterior margin in the middle surpasses anterior corners; punctation somewhat coarser than on head, between punctation with scattered micropunctures (magnification 70x); lateral margin equal on its total length. Elytra (Fig. 5) about 1.4times longer than width combined; 9 rows of punctures, distances between punctures equal to 1-2 diameters; second row with 23-25 punctures; rows 1-2 reaching apex, rows 3+6 joined before apex and enclosing joined rows 4+5; intervals convex, with very sparse micropunctures as on pronotum. Abdominal sternites 1-4 with small and scattered punctation, abdominal sternite 5 with rough punctation as on pronotum. Protibia in both sexes in distal internal third with a few long yellow hairs; pro- and mesotibia laterally with 1-2 spines, metatibia without spines. Aedeagus see Fig. 11.

REMARKS: The new species possesses all described genus characters, in particular the antenna with only 9 antennomeres, the last 2 antennomeres broad, the head with deep ventral antennal grooves and the cheeks without border. It differs notably from the single hitherto described species, *klapperichi* from Taiwan (according to the des-

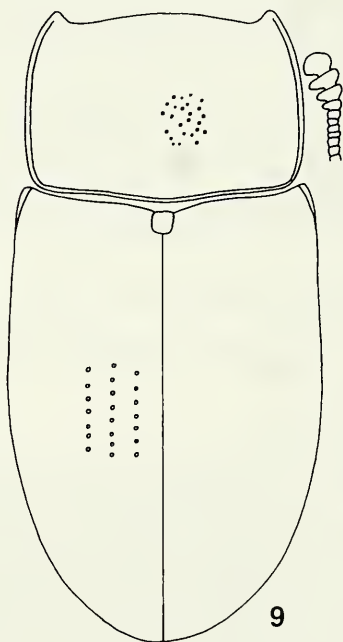
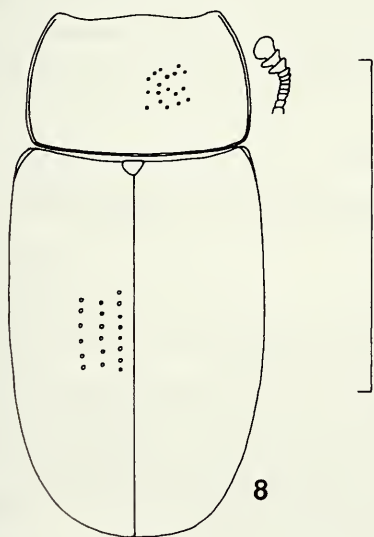
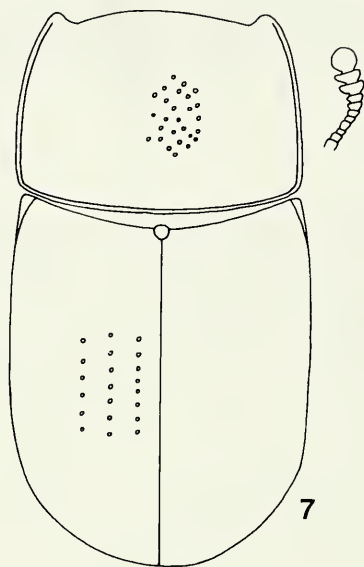
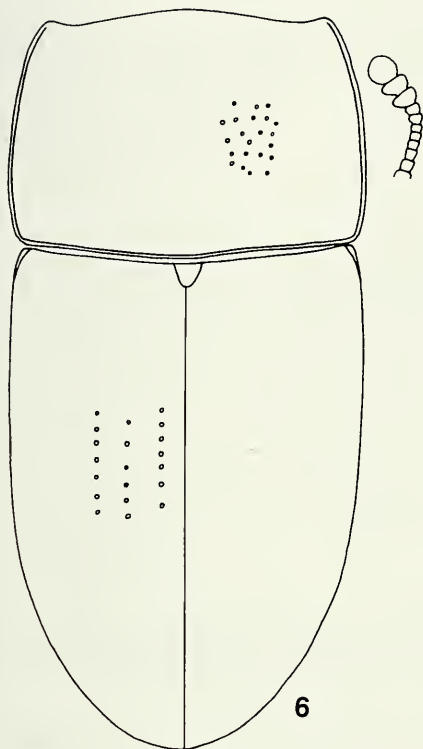


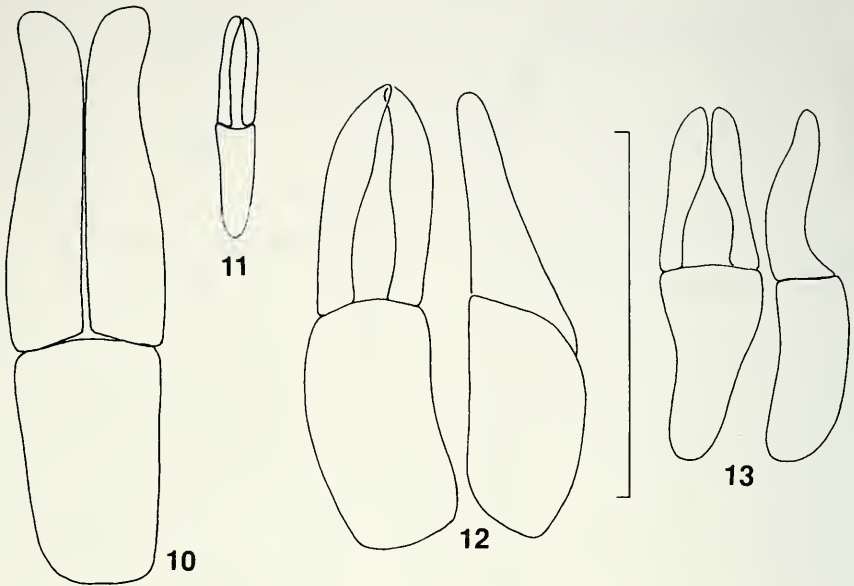
FIGS 1-5

Dorsal view of pronotum and elytra with punctation, antenna. - 1: *Dioedus loffleri* from Sabah; 2: *Dioedus sumbawacus* sp.n., holotype; 3: *Dioedus minimus* from Sumatra; 4: *Dioedus minimus* from Cameron Highland; 5: *Taiwanotagalus nepalicus* sp.n., holotype. - Scale line 2.0 mm.

FIGS 6-9

Dorsal view of pronotum and elytra with punctation, antenna. - 6: *Pseudophthora indica* from India; 7: *Pseudophthora lomboca* sp.n., holotype; 8: *Pseudophthora sabahca* sp.n., holotype; 9: *Scolytocaulus bouchardi* from Sabah. - Scale line: 2.0 mm.





Figs 10-13

Aedeagus. - 10: *Dioedus sumbawacus* sp.n. in dorsal view; 11: *Taiwanotagalus nepalicus* sp.n. in dorsal view; 12: *Pseudophthora lomboca* sp.n. in dorsal (left) and lateral (right) view; 13: *Pseudophthora sabahca* sp.n. in dorsal (left) and lateral (right) view. - Scale line: 0.5 mm.

cription and figure), by the proportions of the pronotum: in *klapperichi* the relation width/length is 1.66, in *nepalicus* sp.n. 1.33; in *klapperichi* the anterior corners of the pronotum surpass the anterior margin, in *nepalicus* sp.n. the anterior margin surpasses the anterior corners: in *klapperichi* the lateral margin is somewhat broader and more reflexed than in *nepalicus* sp.n.

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